General

Guideline Title

Systemic treatment of acute myeloid leukemia (AML).

Bibliographic Source(s)

Schuh AC, Fletcher GG, Leber B, Sabloff M, members of the Hematology Disease Site Group. Systemic treatment of acute myeloid leukemia (AML). Toronto (ON): Cancer Care Ontario (CCO); 2016 Feb 2. 245 p. (Program in Evidence-based Care (PEBC) Guideline; no. 12-9). [393 references]

Guideline Status

This is the current release of the guideline.

The Program in Evidence-based Care (PEBC) Guideline over time will expand to contain new information emerging from their reviewing and updating activities.

Please visit the Cancer Care Ontario (CCO) Web site for details on any new evidence that has emerged and implications to the guidelines.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Regulatory Alert

FDA Warning/Regulatory Alert

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

Drug Withdrawal

- June 21, 2010 – Mylotarg (gemtuzumab ozogamicin): The U.S. Food and Drug Administration (FDA) notified healthcare professionals that results from a recent clinical trial raised new concerns about the product's safety, and the drug failed to demonstrate clinical benefit to patients enrolled in trials. Mylotarg will not be commercially available to new patients. Patients who are currently receiving the drug may complete their therapy following consultation with their healthcare professional. Healthcare professionals should inform all patients receiving Mylotarg of the product's potential safety risks. Any future use of Mylotarg in the United States will require submission of an investigational new drug application to the FDA.

Recommendations

Major Recommendations

Preamble

After reviewing the literature to arrive at these recommendations there are two important background issues that will affect their implementation:

1. Fitness or frailty is a key determinant in assessing whether a patient should be offered induction chemotherapy with curative intent because of the potential toxicity of this approach. The selection criteria for entry into most of the studies mentioned do not explicitly address this issue other than age and performance status. In studies specifying young or elderly patients, the cut-off is often 60 years of age, but 50 to 65 years have been used in some trials. It is becoming clear that age alone is not an accurate way of determining treatment tolerability and other tools are emerging that may refine the evaluation of this important factor. These types of studies are either in progress or in design and will hopefully better define the target population for these recommendations.
2. Due to the complex nature of treatment of acute myeloid leukemia (AML) and the heterogeneous way in which it is treated in different countries, these recommendations must be considered in the broader context of the jurisdiction in which the treatments were administered. For example, comparing the outcomes of different induction regimens may depend on when bone marrow evaluations were performed to confirm treatment response, and the number of induction courses that are considered standard (one versus two). Dosing of agents may also be influenced by the other agents used in the regimen. Similarly, the outcomes of consolidation regimens may be influenced by the preceding induction regimen, which is not uniform.

Question 1. Induction for Previously Untreated AML

Recommendation 1

Cytarabine (cytosine arabinoside, AraC) plus an anthracycline (or anthracenedione) is recommended as standard induction treatment for AML.

- Conventional-dose AraC at 100-200 mg/m^2/day for seven days is recommended for routine use
- High-dose AraC (HDAC) (1-3 g/m^2/day) may be considered in younger patients and those with poor-risk factors*.
- Idarubicin (IDA), daunorubicin (DNR), and mitoxantrone (MTZ), are the recommended anthracyclines (anthracenediones) for use with AraC.
    - The recommended dose for DNR is 60 mg/m^2/day.
    - It is recommended that IDA or DNR be administered for three days. Various regimens with MTZ have been used and are considered acceptable.

*See Preamble above for age considerations and Background (Section 2 of the original guideline document) for a summary of the European LeukemiaNet subgroups.

Recommendation 2

Addition of gemtuzumab ozogamicin (GO) at 3 mg/m^2 to 7+3 regimens is recommended.*

*Note from the National Guideline Clearinghouse (NGC): On June 21, 2010, the U.S. Food and Drug Administration (FDA) notified healthcare professionals that results from a recent clinical trial raised new concerns about the safety of Mylotarg (gemtuzumab ozogamicin), and that the drug failed to demonstrate clinical benefit to patients enrolled in trials. Mylotarg will not be commercially available to new patients. Patients who are currently receiving the drug may complete their therapy following consultation with their healthcare professional. Healthcare professionals should inform all patients receiving Mylotarg of the product's potential safety risks. Any future use of Mylotarg in the United States will require submission of an investigational new drug application to the FDA. See the FDA Web site for more information.

Recommendation 3

The purine analogues cladribine, fludarabine, and clofarabine cannot be recommended for routine use at this time.

There may be a role in relapsed/refractory AML (see Question 3 below).

Recommendation 4

Addition of etoposide to AraC plus DNR induction is not recommended.

Recommendation 5

Induction chemotherapy adjuvants such as granulocyte-colony stimulating factor (GCSF) or granulocyte-macrophage (GM)-CSF, interleukin-11, or multidrug resistance modulators such as cyclosporine A, PSC-833 (valspodar), and zosuquidar are not recommended.

Question 2. Post-Remission Treatment

It is considered standard practice to give consolidation treatment to patients who achieve complete remission (CR) after induction treatment. Transplantation was outside the scope of the review and other guidelines should be consulted concerning appropriate selection of patients for transplant. All patients that may be transplant candidates should receive early referral to a transplant centre. While transplant may take place immediately after induction (without any consolidation), due to delays prior to transplant, most patients scheduled for transplant will receive consolidation treatment.

Recommendation 6

Two or three courses of consolidation are recommended.

Recommendation 7

- For patients with core-binding factor (CBF)-AML receiving consolidation with AraC alone, HDAC at 1-3 g/m^2/day is recommended. HDAC may be considered for other patients.
- Patients with CBF-AML should receive three cycles of consolidation, of which at least two contain HDAC.

Recommendation 8

HDAC or standard-dose AraC may be used in combination chemotherapy. Standard-dose combination chemotherapy should be considered for patients determined to be unsuitable for HDAC consolidation.

Recommendation 9

- There is insufficient evidence to make any recommendations for or against the use of maintenance chemotherapy in patients who received consolidation therapy.
- Use of maintenance treatment alone is not routine, but may be considered for those unable to tolerate consolidation.

Question 3. Relapsed or Refractory AML

While the intent in the treatment of relapsed or refractory AML is to allow subsequent transplant for responding patients, the decisions regarding transplant eligibility and procedures are beyond the scope of this document. The Program in Evidence-based Care (PEBC)/Cancer Care Ontario (CCO) report on Stem Cell Transplant and recent provincial guidelines should be consulted. All patients that may be transplant candidates should receive early referral to a transplant centre.

Recommendation 10

- For patients with refractory disease or relapse, a more intensive or non-cross-resistant treatment is recommended. The following list is not meant to be inclusive of all reasonable therapies, but highlights a few with good response in the included randomized controlled trials (RCTs):
  - HDAC + MTZ
  - AraC (500 mg/m^2/day continuous infusion)* + MTZ + etoposide ± GM-CSF
  - AraC (100 mg/m^2 every (q)12h) + DNR + etoposide
  - Low-dose CAG: AraC (10 mg/m^2 q12h) + aclarubicin (ACR) + GCSF ± etoposide
- Clofarabine, fludarabine (FLAG [fludarabine+high dose AraC+GCSF], FLAG-IDA), and cladribine regimens should be considered when alternative or additional agents are required.

*See qualifying statement in the original guideline document regarding dose.

Question 4. Which Patient Characteristics Are Most Important When Making Treatment Decisions?

During the planning stages of the systematic review it was decided to focus on RCTs, while acknowledging that RCTs might not provide the best source of evidence on patient characteristics. Some treatments were found to be of benefit in only a subset of patients (age, cytogenetic risk or subtype); however, the trials were usually not powered to detect differences in subgroups. The RCTs were not designed to directly determine which of these factors should guide treatment. The accompanying literature review, while commenting on some characteristics related to treatment, was not sufficient to address this question and no recommendations are being made. Several guidelines on treatment of AML have included sections on patient factors including age, comorbidities, cytogenetic abnormalities and associated risk category, and response to previous treatment. The most recent are the National Comprehensive Cancer Network (NNCN) guideline, the Canadian consensus guideline for older

patients, and the European Society for Medical Oncology (ESMO) guideline for diagnosis, treatment, and follow-up. Older but comprehensive management guidelines from Britain, Italy, and the European LeukemiaNet are also relevant. The reader is referred to these documents for further details. Some of this information may arise from studies that are currently ongoing.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Acute myeloid leukemia (AML)

Guideline Category

Management

Risk Assessment

Treatment

Clinical Specialty

Hematology

Internal Medicine

Oncology

Pharmacology

Intended Users

Advanced Practice Nurses

Nurses

Pharmacists

Physician Assistants

Physicians

Guideline Objective(s)

- To make recommendations regarding the most effective intensive systemic treatment of acute myeloid leukemia (AML) in adult patients
- To make recommendations regarding use of patient characteristics to determine appropriate treatment

Target Population

Adult patients with acute myeloid leukemia (AML) (excluding acute promyelocytic leukemia) who are deemed suitable for intensive treatment

Interventions and Practices Considered

1. Induction treatment for previously untreated acute myeloid leukemia (AML)
    - Cytarabine (cytosine arabinoside, AraC) plus an anthracycline or anthracenedione (idarubicin [IDA], daunorubicin [DNR], mitoxantrone [MTZ])
    - Addition of gemtuzumab ozogamicin (GO)*
    - Purine analogues: cladribine, fludarabine, and clofarabine (not recommended for routine use)
    - Addition of etoposide to AraC plus DNR (not recommended)
    - Induction chemotherapy adjuvants: granulocyte-colony stimulating factor (GCSF), granulocyte-macrophage (GM)-CSF, interleukin-1 (not recommended)
    - Multidrug resistance modulators: cyclosporine A, PSC-833 (valspodar), and zosuquidar (not recommended)
2. Post-remission treatment
    - Consolidation treatment (high-dose or standard dose AraC)
    - Referral for transplant
    - Maintenance treatment
3. Treatment of relapsed or refractory AML using a more intensive or non-cross-resistant treatment
    - High-dose AraC (HDAC) + MTZ
    - AraC + MTZ + etoposide ± GM-CSF
    - AraC + DNR + etoposide
    - Low-dose CAG: AraC + aclarubicin + GCSF ± etoposide
    - Clofarabine, fludarabine (FLAG [fludarabine + HDAC + GCSF], FLAG-IDA)
4. Patient characteristics to consider when making treatment decisions (no formal recommendations made)

*Note from the National Guideline Clearinghouse (NGC): On June 21, 2010, the U.S. Food and Drug Administration (FDA) notified healthcare professionals that results from a recent clinical trial raised new concerns about the safety of Mylotarg (gemtuzumab ozogamicin), and that the drug failed to demonstrate clinical benefit to patients enrolled in trials. Mylotarg will not be commercially available to new patients. Patients who are currently receiving the drug may complete their therapy following consultation with their healthcare professional. Healthcare professionals should inform all patients receiving Mylotarg of the product's potential safety risks. Any future use of Mylotarg in the United States will require submission of an investigational new drug application to the FDA. See the FDA Web site for more information.

Major Outcomes Considered

- Complete response/remission (CR)
- Overall survival (OS)
- Disease-free survival (DFS)
- Event-free survival (EFS)
- Recurrence-free survival (RFS)
- Survival time
- Hematological recovery
- Side effects of medication
- Induction death

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Search for Existing Guidelines

A search for existing guidelines is generally undertaken prior to searching for existing systematic reviews or primary literature. This is done with the goal of identifying existing guidelines for adaptation or endorsement in order to avoid the duplication of guideline development efforts across jurisdictions. For this project, the following databases were searched for existing guidelines that addressed the research questions: SAGE Directory of Cancer Guidelines, National Guideline Clearinghouse (NGC), and the Canadian Medical Association (CMA) Infobase. Web sites of the following guideline developers were also searched: European Leukemia Net, European Hematology Association, National Institute for Health and Care Excellence (NICE) (UK), Scottish Intercollegiate Guidelines Network (SIGN) (UK), American Society for Clinical Oncology (ASCO) (US), National Comprehensive Cancer Network (NCCN) (US), National Health and Medical Research Council (Australia), and the New Zealand Guidelines Group. MEDLINE and EMBASE were searched for guidelines for the period 1990 to October 17, 2014 (see Appendix 3 of the original guideline document). Guidelines were considered as potentially relevant if they were based on a systematic review and were on the topic of systemic treatment of acute myeloid leukemia (AML) in adults. A search for existing guidelines for adaptation or endorsement did not yield an appropriate source document for the full project, although existing guidelines would be referred to especially for the final question dealing with patients characteristics influencing treatment decisions. A search of the primary literature was required.

Systematic Review Methods

A literature search strategy (see Appendix 3 of the original guideline document) was developed and conducted using the MEDLINE and EMBASE databases for the period 1990 to October 17, 2014; it was rerun on August 18, 2015 to find recent publications. The search included guidelines, systematic reviews, and randomized controlled trials (RCTs). Systematic reviews were evaluated based on their clinical content and relevance prior to screening of primary studies. The intent was to determine whether there were reviews that could form the literature base for this guideline instead of conducting a new systematic review. Reviews on subgroups of patients or treatments were identified that might supplement the analysis, and these are referred to later in interpretation of the results. It was determined that none of the systematic reviews were comprehensive and current enough to form the basis of this guideline. A full review of the primary RCT literature was therefore required. Abstracts from conferences of the American Society for Clinical Oncology (ASCO), American Society for Hematology (ASH), and European Hematology Association (EHA) were searched for years 2009 to 2014 using EMBASE and the conference Web sites. As a result of external review comments, the ASH 2015 conference abstracts were also searched; however, as this was subsequent to the formal systematic literature review, these results are indicated as such and have not been fully integrated into the review.

Study Selection Criteria and Process

A review of the titles and abstracts and subsequent full-text review (if warranted) was conducted by one reviewer.

Inclusion Criteria

- Adult patients with AML randomized to systemic treatment versus other systemic treatment (including different schedule/dose) or placebo
- For induction therapy, at least one arm consisted of systemic therapy including a combination of a cytarabine and an anthracycline (or derivative such as the anthracenedione mitoxantrone [MTZ])
- RCTs could include a mixture of leukemias/myelodysplastic syndromes (MDS) as long as at least 50% of patients had AML or outcomes of AML patients were reported separately.
- Reported outcomes related to disease control (complete remission rate) and/or survival

Exclusion Criteria

- Studies focussed on stem cell transplantation, supportive care (e.g., transfusions, prevention or treatment of infections or iron overload). Granulocyte colony-stimulating factor (GCSF) or related agents were not excluded when it appeared use was being evaluated as part of the systemic therapy to treat AML (instead of complications/side effects).
- RCTs of systemic treatment compared with transplantation
- Retrospective studies, prospective cohort studies, case control studies, case series studies
- Studies focussed on patients with acute promyelocytic leukemia (APL), acute lymphoblastic leukemia, non-acute leukemias, or myelodysplastic syndromes (MDS)

Refer to the "Results" section of the original guideline document for information on studies retrieved through the literature searches. The relationship of the various stages of AML treatment, research questions, and number of trials located is illustrated in Figure 4-1 of the original guideline document.

Number of Source Documents

- Question 1 (induction of remission) - 161 trials*

- Question 2 (consolidation/maintenance) - 45 trials
- Question 3 (refractory disease or relapse) - 34 trials

*Includes 27 trials with secondary randomization to consolidation and/or maintenance.

Methods Used to Assess the Quality and Strength of the Evidence

Expert Consensus

Rating Scheme for the Strength of the Evidence

Not applicable

Methods Used to Analyze the Evidence

Meta-Analysis of Randomized Controlled Trials

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Data Extraction and Assessment of Study Quality and Potential for Bias

Ratios, including hazard ratios (HR), were expressed with a ratio <1.0 indicating benefit of the investigational treatment compared to the control or placebo. All extracted data and information were audited by an independent auditor.

Important quality and completeness of reporting features for randomized trials, such as sample size calculations, number of patients, statistical significance of outcomes, and whether analysis was on an intent-to-treat (ITT) basis were extracted for each study. Studies in which effectiveness of randomization is suspect due to unequal group characteristics have a notation added. Blinding of outcome assessment was rare and therefore not used as criteria for assessment. Extraction of data on adverse events was generally limited to significant differences between treatment arms in severe (grade 3+) adverse events.

Synthesizing the Evidence

When clinically homogeneous results from two or more trials were available, a meta-analysis was conducted using the Review Manager software (RevMan 5.3 provided by the Cochrane Collaboration). For time-to-event outcomes, the HR, rather than the number of events at a specific time, is the preferred statistic for meta-analysis, and is used as reported. If the HR and/or its standard error were not reported, they have been derived from other information reported in the study, using the methods described by Parmar et al. For all outcomes, the generic inverse variance model with random effects, or other appropriate random effects models have been used. Statistical heterogeneity was calculated using the X^2 test for heterogeneity and the I^2 percentage. A probability level for the X^2 statistic less than or equal to 10% ($p \leq 0.10$) and/or an I^2 greater than 50% was considered indicative of statistical heterogeneity.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Guideline Developers

This guideline was developed by the Systemic Treatment of Acute Myeloid Leukemia Guideline Development group (GDG) (see Appendix 1 of the original guideline document), which was convened at the request of the Systemic Treatment Group of Cancer Care Ontario (CCO). The

GDGs are composed of clinicians, other healthcare providers and decision makers, methodologists, and community representatives from across the province.

The project was led by a small Working Group of the Systemic Treatment of Acute Myeloid Leukemia GDG, which was responsible for reviewing the evidence base, drafting the guideline recommendations, and responding to comments received during the document review process. The Working Group had expertise in acute leukemia and health research methodology. Other members of the Systemic Treatment of Acute Myeloid Leukemia GDG served as the Expert Panel and were responsible for the review and approval of the draft document produced by the Working Group.

Guideline Development Methods

The Program in Evidence-based Care (PEBC) produces evidence-based and evidence-informed guidance documents using the methods of the Practice Guidelines Development Cycle. This process includes a systematic review, interpretation of the evidence, and draft recommendations by the Working Group; internal review by content and methodology experts; and external review by Ontario clinicians and other stakeholders.

The PEBC uses the Appraisal of Guidelines Research and Evaluation (AGREE II) framework as a methodological strategy for guideline development. AGREE II is a 23-item validated tool that is designed to assess the methodological rigour and transparency of guideline development.

Research Questions

The Working Group developed the following research questions:

1. What is the most effective systemic induction treatment for adults with previously untreated acute myeloid leukemia (AML) who can tolerate intensive treatment?
2. What is the most effective systemic post-remission treatment (consolidation and/or maintenance, excluding stem cell transplant) for adults with previously untreated AML?
3. What is the most effective systemic treatment (reinduction, consolidation, maintenance; not including stem cell transplant) for adults with relapsed or refractory AML who can tolerate intensive treatment?
4. Which patient characteristics are most important when making treatment decisions?

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

The guideline developers reviewed published cost analyses.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

Guideline Review and Approval

Internal Review

For the guideline document to be approved, 75% of the content experts who comprise the Guideline Development Group (GDG) Expert Panel must cast a vote indicating whether or not they approve the document, or abstain from voting for a specified reason, and of those that vote, 75% must approve the document. In addition, the Program in Evidence-based Care (PEBC) Report Approval Panel (RAP), a three-person panel with methodology expertise, must unanimously approve the document. The Expert Panel and RAP members may specify that approval is conditional,

and that changes to the document are required. If substantial changes are subsequently made to the recommendations during external review, then the revised draft must be resubmitted for approval by RAP and the GDG Expert Panel.

External Review

Feedback on the approved draft guideline is obtained from content experts and the target users through two processes. Through the Targeted Peer Review, several individuals with content expertise are identified by the GDG and asked to review and provide feedback on the guideline document. Through Professional Consultation, relevant care providers and other potential users of the guideline are contacted and asked to provide feedback on the guideline recommendations through a brief online survey. This consultation is intended to facilitate the dissemination of the final guidance report to Ontario practitioners.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The recommendations are supported by randomized controlled trials, meta-analyses, systematic reviews, and existing guidelines.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Improved systemic treatment of acute myeloid leukemia (AML) in adult patients

See the "Key Evidence" and "Interpretation of Evidence" sections of the original guideline document for a discussion of benefits and harms of specific treatment regimens in particular patient subgroups.

Potential Harms

- Treatment-related adverse events such as hematological toxicity, alopecia, infections, mucositis, vomiting, diarrhea, headache, dizziness, and death
- High-dose cytarabine (HDAC) may have a role for specific subgroups of patients but carries a risk of increased toxicity and should not be used routinely. Adverse events are more frequent at higher doses, and HDAC at 6 g/m^2/day was considered too toxic to include in the recommendation. Patients administered HDAC required more hospitalization and more courses required platelet transfusion.
- Additional cycles of consolidation regimens increase the cost and the incidence of adverse events (including death) and this must be balanced with any survival benefit.

See the "Key Evidence" and "Interpretation of Evidence" sections of the original guideline document for a discussion of benefits and harms of specific treatment regimens in particular patient subgroups.

Qualifying Statements

Qualifying Statements

- Care has been taken in the preparation of the information contained in this report. Nonetheless, any person seeking to apply or consult the report is expected to use independent medical judgment in the context of individual clinical circumstances or seek out the supervision of a qualified clinician. Cancer Care Ontario (CCO) makes no representation or guarantees of any kind whatsoever regarding the report content or use or application and disclaims any responsibility for its application or use in any way.
- See the original guideline document for qualifying statements related to each recommendation.

Implementation of the Guideline

Description of Implementation Strategy

Program in Evidence-based Care (PEBC) guideline recommendations are based on clinical evidence, and not on feasibility of implementation; however, a list of implementation considerations such as costs, human resources, and unique requirements for special or disadvantaged populations is provided along with the recommendations for information purposes.

Implementation Tools

Quick Reference Guides/Physician Guides

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Living with Illness

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2016 Feb 2

Guideline Developer(s)

Program in Evidence-based Care - State/Local Government Agency [Non-U.S.]

Guideline Developer Comment

The Program in Evidence-based Care (PEBC) is a Province of Ontario initiative sponsored by Cancer Care Ontario (CCO) and the Ontario Ministry of Health and Long-Term Care.

Source(s) of Funding

The Program in Evidence-based Care (PEBC) is a provincial initiative of Cancer Care Ontario (CCO) supported by the Ontario Ministry of Health and Long-Term Care. All work produced by the PEBC is editorially independent from the Ontario Ministry of Health and Long-Term Care.

Guideline Committee

Systemic Treatment of Acute Myeloid Leukemia Guideline Development Group (GDG) Working Group

Systemic Treatment of Acute Myeloid Leukemia GDG Expert Panel

Composition of Group That Authored the Guideline

Working Group Members: Andre Schuh (*Working Group chair*), Hematologist, Princess Margaret Cancer Centre/University of Toronto, Toronto; Brian Leber, Hematologist, McMaster University/Juravinski Cancer Centre, Hamilton; Mitchell Sabloff, Hematologist, Ottawa General Hospital/University of Ottawa, Ottawa; Glenn G. Fletcher, Health Research Methodologist, Program in Evidence-based Care, Hamilton

Expert Panel Members: Chris Bredeson, Hematologist; Rena Buckstein, Hematologist, Odette Cancer Centre at Sunnybrook Health Sciences Centre, Toronto; Matthew Cheung, Hematologist, Odette Cancer Centre at Sunnybrook Health Sciences Centre, Toronto; Patricia Disperati, Hematologist, Toronto East General Hospital, Toronto; Jill Dudebout, Hematologist, Cancer Centre of Southeastern Ontario at Kingston General Hospital/Queen's University, Kingston; Lisa Hicks, Hematologist, St. Michael's Hospital, Toronto; David Hodgson*, Radiation oncologist, Princess Margaret Hospital, Toronto; Sindu Kanjeekal, Hematologist, Windsor Regional Cancer Centre at Windsor Regional Hospital, Windsor; C. Tom Kouroukis, Hematologist, Juravinski Cancer Centre, Hamilton; Nicole Laferriere, Hematologist, Northwestern Ontario Regional Cancer Centre at Thunder Bay Regional Health Sciences Centre, Thunder Bay; Leonard Minuk, Hematologist, London Health Sciences Centre, London; Anca Prica, Hematologist, Odette Cancer Centre at Sunnybrook Health Sciences Centre, Toronto; David Robinson, Patient Representative, Economist, Department of Economics, Laurentian University, Sudbury; Robert (Bob) Stevens, Hematologist, Grand River Regional Cancer Centre, Kitchener; Jonathan Sussman, Radiation oncologist, Juravinski Cancer Centre/McMaster University, Hamilton; Ivan Tyono*, Pharmacist, Odette Cancer Centre at Sunnybrook Health Sciences Centre, Toronto; Anthony Woods, Hematologist, Durham Regional Cancer Centre, Oshawa; Yael Zaretsky, Hematologist, Credit Valley Hospital, Toronto

*Abstained from voting on whether to approve the document.

Financial Disclosures/Conflicts of Interest

In accordance with the Program in Evidence-based Care (PEBC) Conflict of Interest (COI) Policy, the guideline authors, Hematology Disease Site Group members, and internal and external reviewers were asked to disclose potential conflicts of interest. See Appendix 2 of the original guideline document for details.

Guideline Status

This is the current release of the guideline.

The Program in Evidence-based Care (PEBC) Guideline over time will expand to contain new information emerging from their reviewing and updating activities.

Please visit the Cancer Care Ontario (CCO) Web site for details on any new evidence that has emerged and implications to the guidelines.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available from the Cancer Care Ontario (CCO) Web site.

Availability of Companion Documents

The following are available:

- Systemic treatment of acute myeloid leukemia (AML). Summary. Toronto (ON): Cancer Care Ontario (CCO); 2016 Feb 2. 10 p. Available from the Cancer Care Ontario (CCO) Web site.
- Program in Evidence-based Care handbook. Toronto (ON): Cancer Care Ontario (CCO); 2012. 14 p. Available from the CCO Web site.
- Program in Evidence-based Care methods handbook. Toronto (ON): Cancer Care Ontario (CCO); 2014 Sep 23. Available from the Program in Evidence-based Care (PEBC) Toolkit Web site.
- Program in Evidence-based Care document assessment and review protocol. Toronto (ON): Cancer Care Ontario (CCO); 2015 Apr 16. 15 p. Available from the CCO Web site.

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on May 24, 2016.

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